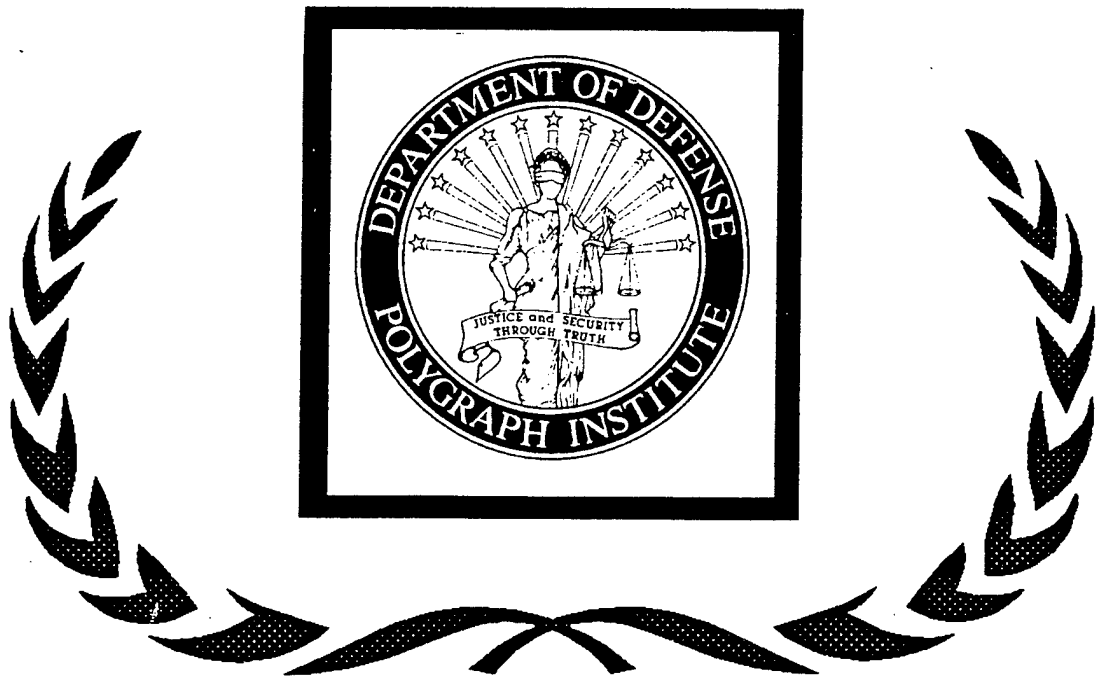


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**Test of a Mock Theft Scenario for Use in the
Psychophysiological Detection of Deception: II**

Eben M. Ingram, Ph.D.

March 1997

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Report No. DoDPI97-R-0002

Test of a Mock Theft Scenario for Use in the Psychophysiological
Detection of Deception: II

Eben M. Ingram, Ph.D.

March 1997

Department of Defense Polygraph Institute
Ft. McClellan, Alabama 36205

Director's Foreword

The second in a series of studies designed to develop laboratory tools to be used during psychophysiological detection of deception (PDD) research is described in this report. In a typical PDD laboratory study subjects participate in a procedure, usually called a mock crime, and then attempt to deceive the examiner concerning their participation. The mock crime procedures used vary among reports, as do the reported accuracy rates of the subsequent PDD examinations. Differences among mock crime procedures may contribute significantly to these result differences. Use of the same, standard, mock crime procedures in multiple studies would reduce the possibility that inconsistent results among studies are due to differences among subject manipulations. Such a standard procedure should be developed to have both validity and reliability. This report describes the second attempt to develop such a standard procedure. Because the procedure is intended exclusively for laboratory use it is more important that it produce valid and reliable decisions than it is that the procedure emulates real life situations.

A handwritten signature in black ink, reading "Michael H. Capps". The signature is fluid and cursive, with a long horizontal stroke at the end.

Michael H. Capps
Director

Acknowledgments

The author wishes to express special thanks to the staff members who contributed their efforts toward the success of this study: Brenda Smith, Department of Defense Polygraph Institute (DoDPI), MSGT Randall Reynolds, U.S. Air Force Office of Special Investigations, and Joan Harrison-Woodard (DoDPI). The author also wishes to thank Special Agent John Hendrickson, Department of the Treasury, Bureau of Alcohol, Tobacco, and Firearms for conducting the tests. This research was funded by the DoDPI, Fort McClellan, Alabama as project DoDPI96-P-0011. The views expressed in this report are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

Abstract

INGRAM, E. M. Test of a mock theft scenario for use in the psychophysiological detection of deception: II. March 1997, Report No. DoDPI97-R-0002. Department of Defense Polygraph Institute, Ft. McClellan, AL 36205.--The Zone Comparison Test, a psychophysiological detection of deception test, was administered to 30 subjects recruited by a temporary employment agency from the local area. The subjects were programmed to be either deceptive or nondeceptive using the mock theft of a valuable coin. This pilot study was designed to determine the effectiveness of the coin theft as a mock crime scenario for laboratory research with the Zone Comparison Test when both pretest and instructions were videotaped, and the test questions were presented using digitized voice. A number of subjects failed to respond appropriately to the test questions during both the pretest and intest. Therefore, the examination was considered to be incomplete and the data were not evaluated further. As a result of the inappropriate responding by a majority of the subjects to many of the test questions, this scenario cannot be considered effective as a mock crime laboratory procedure.

Key Words: psychophysiological detection of deception, mock crime scenarios, Zone Comparison Test

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This study was the second in a series of studies designed to test the effectiveness of a scenario involving the mock theft of a coin as a laboratory procedure in psychophysiological detection of deception (PDD) research. In order to be considered an effective laboratory procedure, the mock scenario must result in high accuracy (80% or better), and the high accuracy rate must be consistently repeatable. Ingram (1996) in a previous test of the mock coin theft scenario found that high accuracy could be obtained with this scenario when inconclusive calls were not considered in the evaluation. When inconclusive calls were considered in the evaluation, the accuracy rate was low (approximately 53%). The study also had a large number of inconclusive calls (38%) in which subject drowsiness was considered to be a potential contributor. Therefore, the present study contains proposed modifications that represent an attempt to overcome the problems of a high number of inconclusive calls and subject drowsiness.

The first study contained videotaped instructions, videotaped pretest, and questions presented using digitized voice. The present study utilizes a similar approach, however, with several modifications to the previous study. One modification was to sample a subject population in which the subjects were expected to be more awake. The population of interest was the civilian population sampled by procurement through an independent contract agency. The rationale for selecting this population was that some previous research (Blackwell, 1994) had gotten fairly good accuracy rates (approximately 75%) with this subject population. Other personal communications suggested that these individuals may be more alert, involved, and less likely than soldiers in training to have been sleep deprived the night before. Subjects from the civilian population may also be more representative of PDD examinees seen in the field. A second modification was to conduct PDD test in the mornings and late afternoons. These time periods were derived from data suggesting that individuals perceive themselves to be most alert at these times [Monk, Leng, Folkand and Weitzman's study (as cited in Monk, 1991)]. A third modification had to do with the videotaped portion of the scenario.

A number of modifications were made to the videotaped portion of the study. First, two narrators were used in the videotaped presentations rather than one. The narrator was used to point out the sensors to the subject rather than have the examiner do so. Second, all statements such as those referring to subject intelligence were removed from the videos. Third, the questions were introduced in the following order: (a) sacrifice relevant question, (b) relevant questions, (c) control questions, (d) irrelevant questions, and (e) symptomatic question. Fourth, the questions themselves were modified by deleting any reference to the word "steal" and replacing it with the appropriate form of the word "take." Fifth, and final, the control questions now consisted of all lie controls rather than a mix of lie and theft controls.

Consequently, this study was designed to determine the effectiveness of a subject programming scenario involving the mock theft of a coin, videotaped instructions and pretest in meeting the requirements necessary to serve as a laboratory procedure in PDD research.

Method

Subjects

Thirty subjects were recruited through a local temporary employment agency [mean age (SD) = 30.07 (7.07) years; range = 20 to 46] and were randomly assigned to the programmed deceptive and the programmed nondeceptive groups as they arrived for testing at the Department of Defense Polygraph Institute (DoDPI) library. Fifteen subjects were assigned to each group. One subject was dropped from the study due to an inability to follow instructions, therefore, data from 29 subjects, 7 male (2 deceptive and 5 nondeceptive) and 22 female (13 deceptive and 9 nondeceptive) were analyzed. Gender was not considered a factor in this study because sex differences were not expected to play a role in the outcome. Of the subjects that participated, all but one subject reported being drug and medication free during the 24 hours prior to the study. One subject reported using medication for seizures during the 24 hours immediately preceding the study. All subjects reported themselves to be in good health.

Examiners

The examiner was a Department of the Treasury, Bureau of Alcohol, Tobacco and Firearms, PDD examiner. The examiner was also an experienced user of the Axciton Computerized Polygraph System.

Apparatus

An Axciton Computerized Polygraph System (Version 7.0, Axciton Systems, Inc., Houston, TX) was used to record skin resistance, respiratory, and cardiovascular activity. The data were saved to computer disks from which paper charts were produced for scoring. The Zone Comparison Test (ZCT) (Department of Defense Polygraph Institute, 1992) was the PDD test format used to test all subjects. Subjects were seated in a Lafayette adjustable-arm chair (Lafayette Instruments Co., Model no. 76871, Lafayette, IN) during PDD testing. Instructions to the subjects and a non clinically based pretest explanation were recorded on videotape and presented using videocassette recorders (Sony Electronics, Inc., Model SVO-1610, San Jose, CA), and 19 inch video monitors (Panasonic Industrial Co., Model CT 208VY, Norcross, GA). The item taken in the scenario was a DoDPI silver, commemorative-type coin. The coin was approximately 42 mm in diameter and 2 mm thick (The coin was made by American Mint, Inc., Anniston, AL). On one side of the coin was the DoDPI emblem and on the other was the statement, "In Memory of James Hoffstein 1991." The narrators of both videotaped dialogues were recorded using a video camera (Panasonic Industrial Co., Model Digital 5010, Norcross, GA). Subjects were videotaped during the PDD examinations using a video camera (Panasonic Industrial Co., Model WVCL 304) controlled with a digital audio visual mixer (Panasonic Industrial Co., Model WJAVE7). The narrators were two adult female Caucasians seated in front of an off-white colored wall. The questions presented to the subject were digitized and recorded to a computer hard disk with an audio computer board (Sound Blaster, Model 16ASP, Creative Labs Inc., Milpitas, CA). An interface (designed and built in house) connected the computer parallel port to an integrated stereo amplifier (Radio Shack, Model SA-155, Fort Worth, TX) and two Speakers (Radio Shack, Model Minimus-77, Fort Worth, TX) which were

used to present the questions. This procedure insured that each question was presented with the same inflection, tone and volume to each subject. Each of the rooms used in the study was 3.5 x 3.6 m and carpeted. Each room contained a one-way mirrored observation window. Both the examination room and the room in which the subject watched the instructions video contained video monitoring equipment. All three rooms were located in the same area of the DoDPI building, and within approximately 15 meters of each other.

Design

The design consisted of two groups, one programmed deceptive and one programmed non-deceptive. All subjects were tested using the ZCT in an attempt to detect the difference in programming. The programmed deceptive subjects engaged in mock crime behavior which consisted of the theft of a silver commemorative coin from a room in a DoDPI building. The coin was reported to be valued at \$200. The programmed nondeceptive subjects went to the same room where the deceptive subjects found the coin, but simply filled out a 3 by 5 inch card with their names.

Procedures

Prospective subjects were escorted to a subject briefing room (DoDPI library) where they were randomly assigned to one of the two experimental conditions. They were then provided by the escort with a copy of, and asked to read, a description of the research (see Appendix A). When the subjects completed reading this form and all appropriate questions had been answered, the escort asked each subject if he or she wished to participate in the study. Those wishing to participate were asked to read and sign a volunteer agreement affidavit (see Appendix B). The escort then questioned the subjects sufficiently to complete a biographical and medical questionnaire (see Appendix C). When this questionnaire was completed, the escort conducted the subject to the room where the scenario was to begin. This room contained a desk, computer, video monitor, VCR and several chairs. The video monitor and VCR were placed on a stand facing the door and situated such that the subject would immediately see them upon entering the room. The desk, computer and unused chairs were located on the unused side of the room. The subject was then given an envelope and instructed to open it and follow the directions in the envelope after the escort left the room. The envelope given to each subject contained either written instructions for deceptive subjects (see Appendix D) or written instructions for nondeceptive subjects (see Appendix E). The instructions told the subject to: (a) read and follow instructions to perform a task in another designated room (both programmed groups had a task to perform); (b) play and view a videotape containing instructions (see Appendix F); and (c) upon completion of the task await the return of the escort. The subject was then instructed to enter a room which contained a desk and two tables upon which sat several laptop computers. In this room the appropriate scenario items were placed on a table in front of the door and situated such that they would be readily seen by the subject when he or she entered the room. The escort monitored each subject's activities via a one-way mirror to ensure that they followed instructions. Subjects were allowed up to 20 minutes to comply with the instructions. When the subject completed the tasks and the escort returned, the subject was taken to the PDD examination room. Here, the subject was met by the PDD examiner. This room contained two desks, a

video monitor and VCR, and the Lafayette arm chair. The subject was seated in the Lafayette arm chair facing the video monitor from a distance of approximately 1.8 m. The examiner sat behind a desk located to the left of the subject such that the subject's chair was located in front of the desk and slightly to the examiner's left. The subject faced a direction perpendicular to the examiner. In other words the subject could only see the examiner by turning his or her head sharply to the left. After introducing himself and seating the subject, the examiner informed the subject to hold all questions until after the videotaped presentation at which time the examiner would answer only those questions that in the examiner's best judgment would not compromise the study goals. The examiner then applied the sensors and started the videotaped pretest (see Appendix G). Subjects were not informed by the examiner as to how they were expected to answer each question. Upon completion of the pretest, the intest, which consisted of a ZCT, was begun. Ten ZCT questions were used in this study (see Appendix H). The subject was videotaped during the PDD examination. When the examination was completed, the sensors were removed from the subject's body. The subject was then escorted to a waiting area where the subject was required to read and sign a subject debriefing statement (see Appendix I). The subject escort then released the subject according to instructions provided (see Appendix J).

Results

An analysis of subject responses indicated that only 13 of the 29 (44%) subjects who provided data for scoring responded appropriately to the examination questions. Inappropriateness of response for the remaining 16 subjects was decided based on the assumption that the subjects should be able to deny complicity in the mock crime as well as in the antisocial acts referred to by the control questions. Therefore, subjects who answered inappropriately during the examination did so by answering "yes" to questions to which a "no" answer was required by this particular test format. It must also be noted that the same subjects who answered inappropriately during the pretest answered inappropriately during the intest. Since the pretest used a videotaped format, the usual mechanism of examiner interaction as a means of eliciting denials to control questions was not present. Despite the lack of examiner interaction, some subjects answered appropriately during both the pretest and the intest (i.e., with a probable "lie"). Nevertheless, since so many of the subjects responded inappropriately during these essential phases of the examination, it is impossible to consider the examination completed for these subjects. Consequently, this makes all but a cursory analysis of the data meaningless. The number of subjects responding appropriately represents a sample of insufficient size for a definitive analysis. Additionally, the proportion of deceptive to non-deceptive subjects that resulted when only 13 subjects responded appropriately was highly unequal (10 deceptive and only 3 nondeceptive).

Discussion

The results of this study are interpreted to indicate that the present approach cannot be considered adequate as a laboratory procedure for use with the ZCT. First, from the results it can be seen that many subjects did not respond appropriately to the control questions during the

videotaped pretest. Secondly, because of the number of subjects that would have to be dropped from the analysis due to inappropriateness of responding, the number of subjects remaining in the study was insufficient to conduct a meaningful analysis of the scenario's accuracy.

The results of this study, however, do serve to highlight a problem that stems from the use of a prerecorded pretest. In a typical ZCT examination, the examiner establishes a rapport with the examinee during the pretest (Department of Defense Polygraph Institute, 1994). It is during the establishment of this rapport that the examinee's denials of the antisocial acts referred to in the control questions are "locked in" (i.e., the examinee is now committed to give negative responses to the control questions during the test). These negative responses are the probable lies upon which this particular type of control question test is based. Therefore, in this study when subjects failed to deny the assertion made by the control questions, the probable lies necessary for the probable lie control question approach never occur. In field examinations, unless a specific accommodation such as using extended questions is made, this would result in the termination of the examination. In the videotaped pretest this specific accommodation was not made in the case of inappropriate responses. Since many subjects answered the control questions with an inappropriate "yes" or a probably truthful response, the prerecorded pretest used in this study failed to establish the commitment to the negative responses necessary for the required control question test format. Therefore, in order to use a prerecorded video taped pretest and still meet the control question test format requirement, it will be necessary to develop an approach that will allow the subject to make the appropriate responses of lying to the control questions during the pretest. If this kind of videotaped pretest can be developed, then the format requirement of the control question test will be met. In order to obtain the most effective standard scenario, it is important to proceed with further attempts to reduce variability within the pretest with an effective videotaped version of a pretest.

References

Blackwell, N. J. (1994). An evaluation of the effectiveness of the polygraph automated scoring system (PASS) in detecting deception in a mock crime analog study (Report No. DoDPI94-R-0003). Ft. McClellan, AL: Department of Defense Polygraph Institute.

Department of Defense Polygraph Institute. (1992). Zone comparison test. Fort McClellan, Alabama: Author.

Department of Defense Polygraph Institute. (1994). Pretest interview. Fort McClellan, Alabama: Author.

Ingram, E. M. (1996). Test of a mock theft scenario for use in the psychophysiological detection of deception: I (Report No. DoDPI96-R-0003). Ft. McClellan, AL: Department of Defense Polygraph Institute.

Monk, T. H. (1991). Circadian aspects of subjective sleepiness: a behavioral messenger? In T. H. Monk (Ed.), Sleep, sleepiness & performance (pp. 39-63). Chichester: John Wiley & Sons Publishers.

Office of Technology Assessment. (1983). Scientific validity of polygraph testing: A research review--A technical memorandum (OTA Publication No. OTA-TM-H-15). Washington, DC: U.S. Congress, Office of Technology Assessment.

Appendix A

Description of Research

**** DODPI96-P-0011 ****

WELCOME: Welcome to the Department of Defense Polygraph Institute. This may be the first time you have participated in a research project, so we would like to provide you with some information concerning your visit today. PLEASE REMEMBER that your participation is entirely voluntary--you are free to leave at any time. If you have any questions, please feel free to ask the individuals assisting you.

PROJECT TITLE: Test of a Mock Theft Scenario for Use in the Psychophysiological Detection of Deception: II.

PRINCIPAL INVESTIGATOR: Eben M. Ingram, Ph.D., Research Psychologist.

BACKGROUND/SIGNIFICANCE: The psychophysiological detection of deception (PDD) is a process designed to determine whether an individual is responding truthfully to a series of questions. PDD is commonly called "lie detection" or "polygraph" test. The process is based on the assumption that an individual who is deceptive (i.e., lying) has a greater response in some body systems than a person who is not. While this is generally true, we are always seeking methods of improving the process.

PURPOSE OF STUDY: This study is designed to test the effectiveness of a subject programming scenario.

YOU SHOULD NOT PARTICIPATE IN THIS STUDY IF ANY OF THE FOLLOWING ARE TRUE:

- 1) I am currently taking prescription medication.
- 2) I have a history of dizziness or fainting spells.
- 3) I have been diagnosed with a heart condition.
- 4) I have been diagnosed with high blood pressure.
- 5) I have been diagnosed with a respiratory ailment, such as asthma or emphysema.
- 6) I currently suffer from an acute health problem such as a cold, active allergy problem, hemorrhoidal problem.
- 7) I am pregnant (females only).

PROCEDURES: During this project you will be asked to participate in a research session lasting approximately 3 hours. You will be asked to enter a room, remove something from that room, and possibly, to lie about what you took from the room during a PDD examination. Some people will be instructed to lie about what they took from the room and some will be asked to answer truthfully about what was taken from the room. If you are instructed to be deceptive about what you took from the room, YOUR JOB IS TO LIE SUCCESSFULLY, to the PDD

examiner concerning what you took from the room. Participation in the PDD process is relatively simple. The examiner will ask several questions concerning your age, health, and normal daily activities. A theory of the psychophysiological detection of deception will be explained and the questions you will be asked during the examination will be reviewed. The examiner will then attach sensors to your body.

DESCRIPTION OF SENSORS USED AND THEIR ATTACHMENT: Two metal plates will be placed on the first and third fingers of the left hand for the purpose of recording sweat gland activity. Two rubber pneumatic tubes will be attached such that they will encircle the chest and stomach. These tubes transmit changes in breathing to the computer. Finally, a blood pressure cuff will be attached to the upper arm for the purpose of recording changes in blood volume. You will be asked to sit still for several minutes while the examiner asks the questions on the test. The examiner may ask the same questions several times during the examination. When the examination is finished, the sensors will be removed, you will be asked to sign a debriefing confidentiality statement, and you will be escorted out of the building. Unfortunately we will not be able to tell you the results of your examination because the data analysis and reduction process will not be completed today.

DISCOMFORTS: During a PDD examination, some people find it difficult to sit still several minutes at a time while physiological reactions are recorded. The sensors used may also be uncomfortable. The examiner is sensitive to this discomfort and will attempt to make the process as brief as possible. The actual PDD tests last only a few minutes each. While you may be asked to participate in several tests, the total length of time that you will actually be participating in a polygraph examination is considerably less than the 3 hours we ask you to remain here.

TAPE-RECORDING: Examinations conducted during this project may be recorded on audio or video tape using wall and ceiling mounted video cameras/microphones and commercial recorders. The recordings are made for quality control purposes and will be maintained in archives for several years, as required by law.

RISKS: There are no known risks involved in this study.

CONFIDENTIALITY OF RECORDS: You will not be asked any personal questions by the examiner, except medically related information necessary for this study. Neither your identity nor any information you reveal during this project will be released to anyone not directly involved in the research. **THE LEGAL AUTHORITY ENTITLED TO REVIEW RESEARCH RECORDS FOR ADHERENCE TO HUMAN USE REGULATIONS** is the DoDPI Human Use Committee.

YOUR RIGHTS: You have the right to ask questions about any aspect of your participation in the study. If problems arise at any time in conjunction with your involvement in the study you should contact Eben M. Ingram, Ph.D., (205) 848-3803/5782, Department of Defense Polygraph Institute, Fort McClellan, AL 36205. If you believe you have been injured as a result of

participating in this study you should contact the Commander of the Noble Army Community Hospital, Fort McClellan, Alabama, 36205, telephone number (205) 848-2200.

VOLUNTARY PARTICIPATION: Your participation in this study is completely voluntary. **If you would prefer not to participate, do not volunteer for it!** Even if you decide to participate in the study, you may discontinue at any time without penalty or loss of benefits to which you are entitled. Should you decide not to participate, please inform your escort. If during the polygraph examination itself you decide not to continue, inform the examiner and you will be released without penalty.

ADDITIONAL COMMENTS: It is very important that you convince the examiner that you are being absolutely truthful during the examination. It is also VERY IMPORTANT that you do not discuss your experiences in the PDD examination with your fellow research subjects. If you discuss your experiences during the PDD examination with others you will be withdrawn from the study without further benefit.

Appendix B

Volunteer Agreement Affidavit

**** DODPI96-P-0011 ****

Subject #: _____
Name: _____
SSN: _____ / _____ / _____ Date of Birth (Mo/Da/Yr): _____ / _____ / _____
Place of Birth: _____
Home Address: _____
City: _____ State: _____ Home Phone Number: _____

This form is affected by the Privacy Act of 1974.

AUTHORITY: 10 USC 3013, 44 USE 3101 and 10 USC 1071-1087, and E.O. 9397.

PRINCIPLE PURPOSE: To document voluntary participation in a DoD Polygraph Institute Research Program.

ROUTINE USES: The SSN and home address will be used for identification and locating purposes. Information derived from the study will be used to document the study, adjudication of claims, and for mandatory record keeping associated with human use in government research. Information may be furnished to Federal agencies.

VOLUNTARY DISCLOSURE: Failure to furnish requested information will preclude your voluntary participation in this investigational study.

PERSONAL STATEMENT

I am at least 19 years of age and do hereby volunteer to participate in a research study titled "Test of a Mock Theft Scenario for Use in the Psychophysiological Detection of Deception : II (DoDPI96-P-0011)," being conducted by Eben M. Ingram, Ph.D.

1. I understand that I am participating in a research study to examine several measures and techniques, some of which are currently employed in criminal and/or security screening situations where the psychophysiological detection of deception (PDD) is used. PDD is commonly called a 'polygraph test' or 'lie detection'.

2. To the best of my knowledge, none of the following are true:

- 1) I am currently taking prescription medication.
- 2) I have a history of dizziness or fainting spells.

- 3) I have been diagnosed with a heart condition.
- 4) I have been diagnosed with high blood pressure.
- 5) I have been diagnosed with a respiratory ailment,
such as asthma or emphysema.
- 6) I currently suffer from an acute health problem such as a cold, active allergy
problem, hemorrhoidal problem.
- 7) I am pregnant (females only).

3. I am aware that my participation in this study will require approximately 3 hours of my time, and that I may be asked to conceal from a trained PDD examiner information concerning my activities during this study.

4. I understand that I will be participating in a PDD examination and that I will be asked to sit still for several minutes at a time during the examination.

5. I understand that there are no known dangers or risks associated with my participation in this study.

6. Two metal plates will be placed on the first and third fingers of the left hand for the purpose of recording sweat gland activity. Two rubber pneumatic tubes will be attached such that they will encircle the chest and stomach. These tubes transmit changes in breathing to the computer. Finally, a blood pressure cuff will be attached to the upper arm for the purpose of recording changes in blood pressure.

7. I understand that my participation may be recorded on audio or video tape and that the recording will be maintained as required by law.

8. I understand that I will receive no reward or benefit of any kind beyond those I have agreed to.

9. I understand that I may terminate my involvement in this study at any time and for any reason.

10. I understand that my participation in this project will be terminated if I discuss the details of my participation with anyone except project supervisory personnel. NOTE: Discussion of details with others could invalidate the data collection.

11. I understand that I should contact the principal investigator, Eben M. Ingram, Ph.D., (205) 848-3803, Department of Defense Polygraph Institute, Fort McClellan, AL, or Mr. Michael Capps, Director, (205) 848-3803, Department of Defense Polygraph Institute, Fort McClellan, AL, if I have any concerns or complaints regarding this study.

12. I understand that any questions concerning my rights regarding any injury that I may receive during this study be directed to the appropriate authority. The authority is the Commander of the Noble Army Community Hospital, Fort McClellan, Alabama, 36205, telephone number (205) 848-2200.

13. I have been given a thorough explanation of my role in this research project. I have been given a chance to ask any questions I have concerning the project and all questions have been answered to my full satisfaction.

Subject Signature

Witness Signature

Printed Name

Printed Name

Appendix C

Biographical/Medical Questionnaire

** DoDPI96-P-0011 **

Subject number: _____

Date of completion: _____

Please carefully complete all of the blanks below:

Name (Please Print): _____

Gender: ()M ()F

Age: _____

Occupation: _____

Hours of sleep last night: _____

Previous PDD Examination: ()Yes ()No

Have you ingested alcohol, nicotine, or caffeine (including coffee, tea, soft-drinks, and chocolate) within the last 24 hours? ()Yes ()No

If so, what and When? _____

How would you describe your present health and physical well being? ()Excellent ()Good ()Fair ()Poor

Are you presently under a physician's care and are you taking any medication? ()Yes ()No

If so, for what condition? _____

Please identify the type, dosage, and last time any medication was taken:

Are you experiencing any pain or discomfort today? ()None ()Mild ()Moderate ()Severe

Reason for any pain or discomfort.

Please note reason(s), if examinee is unsuitable for testing:

Appendix D

Written Instructions for Deceptive Subject

** DODPI96-P-0011 **

Thank you for agreeing to participate in this study. Your task today is to take a rare and valuable coin from a room across the hall, then successfully lie about taking the coin during a psychophysiological detection of deception (PDD) examination. To complete your task, you must not admit to the PDD examiner that you have seen, taken, or have possession of the coin. You must be convincing and make every attempt to hide the fact that you have taken the coin. If you do not think you can complete this task, please open the door to the room you are in and wait for your escort to return.

We require that you complete the following tasks, without assistance, in the order given.

Please:

1. Go across the hall and enter room R-103 .
2. Locate the 3" x 5" card and the small cloth bag on the table.
3. Open the cloth bag and locate the date on the coin. Return the coin to the bag. Using a pencil from the table, write your name on the 3" x 5" card.
4. Conceal both the 3" x 5" card and the cloth bag containing the coin on your person. Hide them in your pocket or somewhere else on your clothing where others cannot see them.
5. Return to the room (E-113) where you received these instructions and close the door.
6. Press the PLAY button on the video cassette player and watch the videotape. When the tape is over, press the STOP button on the video cassette player.
7. Take all of your personal property and step outside the door to meet the escort. You will not be returning to this room.

Appendix E

Written Instructions for Nondeceptive Subject

**** DODPI96-P-0011 ****

Thank you for agreeing to participate in this study. Your task today is to be absolutely truthful during a psychophysiological detection of deception (PDD) examination. You should not lie to the PDD examiner about anything today. You have done nothing wrong and have no knowledge of anyone else doing something wrong. Be absolutely truthful throughout the PDD examination. If you do not think you can complete this task, please open the door to the room you are in and wait for your escort to return.

We require that you complete the following tasks, without assistance, in the order given.

Please:

1. Go across the hall and enter room R-103.
2. Locate the 3" x 5" card on the table.
3. Use a pencil from the table to write your name on the 3" x 5" card.
4. Conceal the 3" x 5" card on your person. Hide it in your pocket or somewhere else on your clothing where others cannot see it.
5. Return to the room (E-113) where you received these instructions and close the door.
6. Press the PLAY button on the video cassette player and watch the videotape. When the tape is over, press the STOP button on the video cassette player.
7. Take all of your personal property and step outside the door to meet the escort. You will not be returning to this room.

Appendix F

Videotaped Instructions to Subjects

**** DoDPI96-P-0011 ****

Hello and welcome to the Department of Defense Polygraph Institute research project. My colleagues and I would like to thank you for taking part in this study. One of our jobs is to improve the psychophysiological detection of deception examination process. The process used to be called a polygraph or lie detector test. We now call it a psychophysiological detection of deception, or PDD for short, examination--to more precisely describe the process. You've probably seen people taking PDD examinations in movies or on television. The PDD examinations in the movies and television are usually similar to, but not exactly like a real PDD examination--so don't be surprised if this process is not exactly what you expect.

One of the methods we use to test our procedures and equipment is a laboratory test. The PDD examiner actually administering the test does not know who is truthful and who is not. The entire purpose of the examination is to see if the equipment and/or examiner can determine who is truthful. We want you to assist us by convincing the examiner that you are being truthful. Thus, your job today is to convince the PDD examiner that you are telling the truth.

As you read earlier, the examiner will attach sensors to your body to measure your physiological responses. The examination questions will be about a coin which was taken from a room down the hall. The examiner doesn't know if you took the coin. I don't know if you took the coin. The escort you met earlier doesn't know if you took the coin. Only you and the person who originally filled the envelopes know who took the coin. It is VERY IMPORTANT that you do not tell anyone if you took the coin.

The PDD examiner will present the same questions to everyone. The questions concern the missing coin. The questions will be presented by audiotape so that they will be the absolute same for everyone. Again, the examiner doesn't know if you took the coin. If you didn't take the coin, you will not need to lie today. Simply tell the truth during the test--that you didn't take the coin and don't know anything about it. If you took the coin, we want you to deny taking it when asked if you took it. In other words we want you to lie about taking the coin. If you did not take the coin and you deny taking it, then you will be telling the truth. Again, your job today is to convince the examiner that you are being completely truthful--whether you are or not.

Thank you again for your assistance with this project. When you open the door to this room someone will escort you to the PDD examination room. If you have any questions which have not been answered, please ask the escort. Due to the nature of this study the escort can answer only a limited number of questions. The escort will say "I can't answer that" if you ask something the escort is not allowed to answer.

Again, your job is to convince the PDD examiner that you are being truthful about the coin--whether you are being truthful or not. We appreciate your assistance with this project.

Good luck during your examination!!

Please press the stop button on the video cassette player now.

Appendix G

Videotaped Explanation of Procedures and Pretest

**** DoDPI96-P-0011 ****

Earlier today a coin was taken from room R-103 in this building. We know that the coin was taken because we've already tested Mr. Dole, the person who reported it missing, and the only employee who knew the coin was here. We're confident that Mr. Dole knows nothing about the coin's current location.

The missing coin was the tenth of ten solid silver commemorative coins. The silver in the coin alone is worth around \$200.00. This coin was special however, because it was donated to the institute by Mrs. James Hoffstein in memory of Mr. Hoffstein. Mr. Hoffstein was a pioneer in the use of physiological reactivity during the detection of deception. Unfortunately, he died of heart disease last year. Whoever took that coin has robbed the Department of Defense Polygraph Institute of it's chance to show tribute to a fine man.

We're just trying to locate the coin. While we don't really suspect that you took the coin, we know you could have because you were one of the people seen outside of the room the coin was taken from. We're testing everyone who was seen outside of that room.

Before we begin the examination, I will explain how the polygraph instrument is used to determine if someone is lying. This instrument amplifies and records activity from your body. Today we will use: (a) two small flat metal sensors that will be attached to the first and third fingers of your the left hand, (b) an expandable tube that will be placed around the upper chest and abdomen, and (c) an occlusive blood pressure cuff that will be placed around the upper right arm.

Research indicates that the signals recorded from these sensors are normally constant. When an individual becomes aroused or is stimulated, as occurs when lying, the signals change.

Basically, the brain and parts of the nervous system control the level of physiological activity in the body. When a person is asked a question that they know the answer to, there are two basic mental processes that occur in the brain. First, the person understands the question. Second, the correct answer is automatically determined and/or recalled. For example, if I ask the question, "Are you in the state of Alabama?" As soon as your brain understood the question, it (the brain) located and identified the truthful answer, which is YES. Your brain did not first decide that you were in Alaska, and then correct itself. The brain identified the truthful answer before you even decided to say YES or NO. If you had decided to say YES, there would have been no mental stress or struggle within yourself to answer that question because your brain knew the answer to be YES and it could have easily caused your mouth to say YES. If you decided to lie about the

state you are in, you are causing your brain to expend extra mental effort to change the automatic truthful response into a deceptive response. During this conscious mental effort to lie, the brain changes (decreases) its monitoring of other body activities, such as breathing, heart beating, and sweat gland activity, so their level of activity changes. When you tell the truth, physiological activity changes very little. Lying takes more mental effort. When a person lies, physiological changes occur in their body because the brain changed the amount of energy it was using to control those activities. The polygraph instrument is constantly recording the level of physiological activity within the body, so the changes resulting from a person telling a lie are recorded and can be identified.

Have you ever told a lie? You probably have. Most of us do at some time. Do you remember how you felt when you told that lie? Think of a time when you told a lie to someone important to you--such as your mother or father; a minister or teacher; a policeman; your brother or sister; possibly a close friend or spouse. Do you remember how you felt? Maybe your heart sped up; you breathed more quickly than usual; you felt sweaty; your face felt warm or turned red. Did you tell your body to respond like that? No. These were automatic physiological reactions. They indicate that your body is reacting to stress. When people lie, there is a physiological reaction. It may be large enough for everyone to notice or so small that even the liar doesn't notice it. That reaction is measured during a PDD examination. A PDD examination works because an instrument is used to amplify and measure these physiological reactions. A trained examiner is able to look at recordings and determine if there are unusual reactions following certain questions. These reactions may indicate that a person is lying. There is nothing magical or mystical about a PDD examination--it is simply the recording, amplification, and interpretation of the examinee's--your--physiological reactions.

Are you a good liar? Some people think they are. It is extremely difficult to successfully lie during a PDD examination. Remember, your job today is to convince the examiner that you are being truthful about the coin. If you feel yourself reacting during the test, simply relax and stop reacting. If you feel your heart speed up, relax to slow your heart down. If you feel yourself breathing strangely or unevenly, relax and breathe normally. If you feel yourself react in any way, simply try to stay calm and relaxed.

During the examination, I would like for you to sit up straight and look straight ahead. Try not to move your body or head during the examination. Such movements will change the signals from your body and I will have to repeat the question, and possibly the complete examination.

I will now present all of the questions that you will be asked today. If you were asked, Are the lights on in this room?--pause--How would you answer? Please answer aloud so that the examiner can hear you. When we are conducting the test, you must answer aloud with a YES or NO to each question. During the test we also want you to answer each question the same as you answered it at this time. Please listen and respond to each question truthfully. If you have any questions at all or are unsure of the truthful answer please ask the examiner.

1. Are the lights on in this room?
2. Regarding that missing coin, do you intend to answer truthfully each question about that?
3. Are you completely convinced that I will not ask you a question on this test that has not already been reviewed?
4. Prior to 1996, did you ever lie to someone who trusted you?
5. Did you take that silver coin?
6. Prior to coming to Alabama, did you ever lie to keep out of trouble?
7. Did you take that silver coin from room R-103?
8. Is there something else you are afraid I will ask you a question about, even though I have told you I would not?
9. Prior to this year, did you ever lie for personal gain?
10. Do you know where that missing silver coin is now?

Remember that you should answer each question truthfully. At the start of the test, you will hear the message "The test is about to begin." When this happens, you should sit perfectly still, answer all questions truthfully, answer immediately after the question is asked, and keep your eyes open during the test. The remaining questions will then be repeated. When you hear the statement "This portion of the test is now complete," please remain still until you are told to relax and that it's OK to move. We need a few seconds before you move to power down the amplifiers, so we don't damage the instrument.

Sometimes there are problems with the recordings because examinees do not remain still. If this occurs, you will hear the message "Please remain still," then the question will be repeated. This is fairly normal, so don't be surprised if a few questions are repeated today. "Do you have any questions?"

Appendix H

Test Questions

** DODPI96-P-0011 **

- X The test is about to begin.
1. Are the lights on in this room?
 2. Regarding that missing coin, do you intend to answer truthfully each question about that?
 3. Are you completely convinced that I will not ask you a question on this test that has not already been reviewed?
 4. Prior to 1996, did you ever lie to someone who trusted you?
 5. Did you take that silver coin?
 6. Prior to coming to Alabama, did you ever lie to keep out of trouble?
 7. Did you take that silver coin from room R-103?
 8. Is there something else you are afraid I will ask you a question about, even though I have told you I would not?
 9. Prior to this year, did you ever lie for personal gain?
 10. Do you know where that missing silver coin is now?
- XX This portion of the test is now complete, please remain still until I tell you to relax.

Appendix I

Subject Debriefing Statement

**** DODPI96-P-0011 ****

Now that you have completed your examination, the entire project staff sincerely thanks you for your help. Your work here may be more important than you realize.

If you participated in attempting to deceive the PDD examiner, you are assured by the project staff that you in no way violated any rule or law. The deception was required for investigational purposes only. If you actually took the coin, please return it to the escort accompanying you away from the examination room. Regardless of the role you played, it is our hope that you were made to feel as comfortable as possible throughout the study. If you do have concerns or questions regarding your participation, please make them known to the principal investigator, Eben M. Ingram, Ph.D., Research Psychologist; (205)848-3803; Department of Defense Polygraph Institute.

Finally, it is VERY IMPORTANT that you DO NOT discuss the details of this study with anyone else. One of your friends, or a friend of a friend, may decide to participate in this or a similar study someday. If they know the details of the investigation process, they could be disqualified from participating in a study and/or unconsciously influence the results of the study using their knowledge.

Please sign this form in the space provided to indicate that you understand the instructions provided above.

Subject Signature

Printed Name

Date

Subject #: _____

Appendix J

Instructions for Subject Escort

** DoDPI96-P-0011 **

Inappropriate and/or non-uniform interaction with human subjects can bias and/or invalidate the results of a study. For this reason, the escort occupies one of the most sensitive and important positions in data collection. The escort should interact with all subjects in a pleasant professional manner. While it is understood that this cannot be done precisely, the escort should attempt to say the same things, at the same time, and in approximately the same manner to each subject. Every attempt should be made to interact with males, females, programmed innocent, programmed guilty, and minorities in exactly the same manner. If an escort is unsure what to do in a particular situation or cannot answer a question, the principal investigator (PI) should be contacted to resolve the issue. The escort should note that the PI was contacted to resolve the problem to ensure appropriate credit for the decision.

During this study, the escort is required to:

1. Ensure that: a) all forms are ready; b) the 3" x 5" card, and coin if necessary, are placed in the target room; c) the scenario video cassette tape is rewound and in the player; d) the scenario television and video cassette players are turned on; and e) (if specified) the subject recording devices are turned on and the media is prepared. It is the escort's responsibility to ensure that the session is recorded as specified in the main protocol.
2. Greet subject (when subject enters building or in waiting area).
3. Introduce yourself.
4. Ask if subject needs to use toilet or would like a drink of water. If subject says yes, guide subject or give directions as appropriate.
5. Escort subject to briefing room and direct subject to sit at table/desk.
6. Direct subject to read Description of Research².
7. Answer as appropriate the subjects' questions.
8. Ask if subject wants to participate in the study. If subject doesn't wish to participate: a) inform PDD examiner; b) escort subject back to waiting area or out of building as appropriate. If subject will participate, instruct subject to complete the Volunteer Agreement Affidavit. Again, answer all of the subjects' questions.
9. Assign subject a number from list provided by principal investigator.
10. Complete the Biographical/Medical Questionnaire for the subject. Question the subject where necessary.
11. Ask if subject needs to use toilet or would like a drink of water. If subject says yes, guide subject or give directions as appropriate. Remind subject that it may be an hour or so before the next opportunity to use the toilet or drink. If subject is wearing clothing which could interfere with sensor placement, remind the subject that the examiner may request the removal of the clothing or some other accommodation for sensor placement be made.

12. Give subject the envelope containing the subject's instructions and leave the room (envelope will already have the subject's number on it).
13. Give the subject's completed Biographical/Medical Questionnaire to the PDD examiner. File the subject's completed Volunteer Agreement Affidavit.
14. Watch subject via the closed circuit television and/or the one-way mirror. If subject has obvious problems following the written instructions (e.g., doesn't leave room, does not play video tape before leaving room), inform the subject that their participation will not be permitted due to their inability to follow instructions--and escort the subject to the waiting area or out of the building. If subject has problems that are not related to following the written instructions (e.g., no writing instrument available, can't get VCR to work, missing forms), go to room and assist subject in resolving the difficulty.
15. When the subject has followed all written instructions and opened the door to the room, escort the subject to the examination room.
16. Make sure subject took the 3" x 5" card (and the coin if subject is programmed deceptive) from the target room. If the subject did not complete the 3" x 5" card or failed to take the coin when it should have been taken, contact the examiner and abort the session.
17. When the examination is over, 1) escort subject to another room, 2) obtain signature on Subject Debriefing Statement, 3) retrieve 3" x 5" card (and coin if appropriate), and 4) escort the subject out of the building or to the waiting area as appropriate.
18. Make sure all information pertaining to that subject's test are completed and filed correctly.